

**Please kindly accept the Amendment to the Title and the Abstract.**

**No new matter has been introduced during this Amendment.**

~~METHOD OF REDUCING ELECTROMIGRATION IN A COPPER LINE BY  
ELECTROPLATING AN INTERIM COPPER-ZINC ALLOY THIN FILM ON A COPPER  
SURFACE AND A SEMICONDUCTOR DEVICE THEREBY FORMED~~

A SEMICONDUCTOR DEVICE HAVING COPPER LINES WITH REDUCED  
ELECTROMIGRATION USING AN ELECTROPLATED INTERIM COPPER-ZINC  
ALLOY THIN FILM ON A COPPER SURFACE.

#### ABSTRACT OF DISCLOSURE

~~A method of fabricating a semiconductor device~~ The present invention relates to the semiconductor device fabrication industry. More particularly a semiconductor device, having an interim reduced-oxygen Cu-Zn alloy thin film (30) electroplated on a blanket Cu surface (20) disposed in a via (6) by electroplating, using an electroplating apparatus, the Cu surface (20) in a unique chemical solution containing salts of Zn and Cu, their complexing agents, a pH adjuster, and surfactants; and annealing the interim electroplated Cu-Zn alloy thin film (30); filling the via (6) with further Cu (26); annealing and planarizing the interconnect structure (35); and a semiconductor device thereby formed. The reduction of electromigration in copper interconnect lines (35) is achieved by decreasing the drift velocity in the copper line (35) / via (6), thereby decreasing the copper migration rate as well as the void formation rate, by using an interim conformal Cu-rich Cu-Zn alloy thin film (30) electroplated on a Cu surface (20) from a stable chemical solution, and by controlling the Zn-doping thereof, which improves also interconnect reliability and corrosion resistance.

**In the Drawings:**

**Please kindly accept the herewith enclosed Substitute Formal Drawings Sheets 1/5 and 2/5.**

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